

A REVISION OF THE GENUS *PLATYLOBIUM* Sm. (PAPILIONACEAE)

by
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ABSTRACT

The endemic Australian genus *Platylobium* Sm. is revised. Four species are recognised and *P. gracile* Dum.-Cours. and *P. rotundifolium* Colla are rejected as names of uncertain application. Formal infraspecific taxa in *P. formosum* are discussed but not upheld. Descriptions, a key to the identification of species, illustrations and distribution maps are provided, together with notes on ecology and relationships.

INTRODUCTION

Platylobium, a small genus of four species described by J. E. Smith, Spec. Bot. New. Holl. 1:17, t.6 (1793), is confined to eastern Australia occurring from the vicinity of Wide Bay in south-eastern Queensland southwards to Tasmania and westward to Kangaroo Island in South Australia. The present centre of distribution of the genus is in Victoria where all species occur. The generic name is taken from the Greek and alludes to the broad pods found in species of the genus.



Fig. 1. The distribution of the genus *Platylobium*.

Platylobium is a member of the tribe Bossiæae (Benth.) Hutch. and belongs to the *Bossiaea* group of genera which are characterised by having uniform dorsifixed anthers with a broad connective, seeds with generally hooded cap-like arils and slender curved radicles exerted from the cotyledons, and plants with a tendency to accumulate canavanine (Polhill, 1976, 1981). The *Bossiaea* group comprises the genera *Bossiaea* Vent., *Platylobium*, *Goodia* Salisb., *Aenictophyton* A. Lee, *Ptychosema* Benth. and *Muelleranthus* Hutch.. *Platylobium* and *Bossiaea* are readily distinguished from the other genera in having the flowers subtended by a series of papery brown scales.

Platylobium was described prior to *Bossiaea* and a number of taxa initially described as species of *Platylobium* are referable to *Bossiaea*. This is not surprising as *Platylobium* is unquestionably very closely allied to *Bossiaea* and the view has been expressed (Polhill, 1976) that *Platylobium* is scarcely distinct from *Bossiaea* at generic level.

Platylobium differs from *Bossiaea* in the development of a distinct wing beyond the upper sutural nerve of the pod and in the valves being very thin and revolute on dehiscence, in the extreme enlargement of the two upper calyx-lobes, and in having a diploid chromosome number of 16 as opposed to the 18 found in *Bossiaea*. In addition, Ferguson & Skvarla (1981) found that the pollen of *Platylobium* has a well-defined endoaperture whereas that of *Bossiaea* has a poorly defined interruption in the endexine.

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Muelleria 5(2): 127-141 (1983).

The extreme enlargement of the two upper calyx-lobes in *Platylobium* does not distinguish the two genera absolutely as the two upper calyx-lobes in some species of *Bossiaea* are greatly enlarged as in *Platylobium*, and the pod-valves in some species of *Bossiaea* are narrowly winged beyond the upper sutural nerve and occasionally are slightly revolute on dehiscence.

The four species of *Platylobium* have a distinctive "look" and appear to represent a fairly natural group. Provided that the close relationship between the genus and *Bossiaea* is acknowledged, the differences between the two provide a workable distinction and no advantage is seen in including the few species of *Platylobium* in the much larger and rather heterogeneous *Bossiaea*. As *Platylobium* was described first, its amalgamation with *Bossiaea* would necessitate the conservation of the latter name.

In habit, all species of *Platylobium* are shrubs or subshrubs with woody rootstocks. The leaves in *P. alternifolium* are alternate whereas in the other species they are opposite except for the occasional occurrence in *P. formosum* of a variant in which some of the leaves are borne alternately. Leaf size and shape in all species except *P. alternifolium* varies considerably. The variation in leaf shape within *P. obtusangulum* and *P. triangulare* is such that unfortunately the character cannot be employed to differentiate the two species. The range of variation in leaf size and shape in *P. formosum* is so great that the extremes look quite different but when the range of variation is inspected it is clear that the extremes are linked by numerous and varied intermediates. Floral characters provide useful means of differentiating the species but the pods and seeds are relatively uniform within the genus.

TAXONOMY

Platylobium Sm., Spec. Bot. New Holl. 1:17, t.6 (1793); Trans. Linn. Soc. Lond. 2:350 (1794); Trans. Linn. Soc. Lond. 9:302 (1808); Willd., Sp. Pl. 3:921 (1802); DC., Prodr. 2:116 (1825); G. Don, Gen. Syst. 2:127 (1832); Benth., Fl. Austr. 2:152 (1864); Benth. in Benth. & Hook.f., Gen. Pl. 1:473 (1865); Taub. in Engl., Pflanzenfam. 3, 3:216 (1893); Hutch., Gen. Fl. Pl. 1:348 (1964); Polhill, Bot. Syst. 1:311 (1976); Polhill in Advances in Legume Systematics 1:395 (1981). TYPE: *P. formosum* Sm.

Shrubs or Subshrubs, sometimes prostrate or occasionally semi-scandent, with one to several slender, terete, unarmed stems arising from a woody rootstock. *Stipules* ovate to narrow-ovate, striate, persistent; stipellae absent. *Leaves* opposite or, less frequently, alternate, simple or unifoliolate, sessile or petiolate, narrow-ovate to broad-ovate-cordate, triangular-ovate, hastate, trilobate, cordate-hastate or occasionally almost orbicular, the apex and usually the angles pungent-pointed, reticulately veined. *Flowers* 1-several from the axils, almost sessile or on long slender pedicels, orange-yellow and red or purplish-brown, subtended by a series of distichous brown papery scales, the bract indistinguishable from the scales; bracteoles paired, at or near the apex of the pedicel, similar to the scales but often larger. *Calyx* sparingly to densely pubescent throughout except in *P. alternifolium*, the two upper lobes greatly enlarged, broadly rounded, usually united for less than half their length, the three lower lobes narrow and acute, persisting in fruit. *Standard* orbicular or reniform, with a well developed claw; *wing* petals rounded or obtuse apically, much shorter than the standard; *keel* petals almost as long as the wings. *Stamen*-filaments united in a sheath split open on one side; anthers uniform, dorsifixed, with a broad connective. *Ovary* sessile or stipitate, style slender, curved, with a small terminal stigma. *Pods* sessile or stipitate oblong, flat, with a conspicuous thin wing 2-5 mm wide beyond the upper sutural nerve, transversely striate-nerved, several-seeded; valves thin, elastically revolute, revealing a glossy inner surface. *Seeds* ovate-ellipsoid or ellipsoid, plump, with a small hilum on a long side covered by a hooded cap-like aril; radicle, slender, curved.

KEY TO SPECIES

1. Leaves alternate; calyx glabrous externally except for a conspicuous fringe of hairs on the margins of the lobes 1. *P. alternifolium*

1. Leaves opposite, very infrequently some leaves alternate (*P. formosum*) but then the calyx clothed externally with spreading or appressed hairs throughout
2. Flowers and pods subsessile, the pedicel concealed by a series of conspicuous brown papery bracts and scales 3. *P. obtusangulum*
2. Flowers and pods distinctly pedicellate, the pedicels exceeding and exerted from the bracts and scales
 3. Leaves broad-triangular or cordate-hastate, the lateral angles and apex usually pungent 2. *P. triangulare*
 3. Leaves narrow-ovate to broad-ovate-cordate, the apex pungent but the lateral angles usually rounded or obtuse and not pungent 4. *P. formosum*

1. **Platylobium alternifolium** F. Muell., S. Sci. Rec. 3:99 (1883); J. H. Willis, Handb. Pl. Vict. 2:277 (1973). SYNTYPES: See under notes. LECTOTYPE, here selected: Victoria, Mt. William, 1883, *D. Sullivan* (MEL 569729!).

Small *subshrub* with one to several prostrate spreading or trailing stems, the young stems sparingly to densely clothed with spreading hairs. *Stipules* ovate or narrow-ovate, up to 3.5 × 2 mm. *Leaves* alternate, unifoliolate: petiole 0.3-2 cm long, sparingly to densely clothed with spreading hairs; lamina cordate to ovate or triangular-ovate with an acute apex or almost orbicular and rounded apically, (0.6)1-2.6 × 0.6-2.5 cm, upper and lower surfaces sparingly to densely clothed with spreading hairs when young but becoming glabrous and minutely scabrid with age, venation fairly prominent. *Flowers* solitary, axillary, on glabrous to sparingly pubescent pedicels 1.5-2 cm long, the pedicels with a series of distichous scales and bracts along their length which are glabrous except for marginal cilia, the paired bracteoles below the calyx 5.5-7.5 × 2.5-3.5 mm, glabrous apart from marginal cilia. *Calyx* pinkish-red, glabrous outside except for a conspicuous fringe of hairs on the margins of the lobes: 2 upper lobes 7-9.5 mm long (including the basal tube of up to 3.5 mm), 4-5 mm wide, the 3 lower lobes up to 3.5 × 1.2 mm, narrow-triangular. *Corolla: standard* oblate, 13.5-15.5 mm long including a claw up to 3.5 mm long, 15-18 mm wide, deeply emarginate apically, brick-red outside, yellow inside with a deep yellow basal horse-shoe shaped throat surrounded by a reddish-purplish zone; *wings* up to 10.5 mm long including a claw up to 2 mm long, up to 3.5 mm wide, auricled, yellow except for a central dark red or purplish band; *keel* petals up to 9.5 mm long including a claw up to 1.5 mm long, 4-4.6 mm wide, auricled, dark purplish in upper half. *Stamens* up to 9.5 mm long. *Ovary* shortly stipitate, up to 5 mm long, margins with long white hairs but otherwise glabrous; style with long white basal hairs, glabrous above. *Pods* oblong, 1.3-2 × 0.7-2 cm, with a thin conspicuous wing up to 2 mm wide beyond the upper sutural nerve, (1)2-4-seeded, with scattered hairs on the margins but otherwise glabrous. *Seed* ellipsoid, 3.6 × 2.5 mm (only one seen) (Fig. 2).

P. alternifolium is confined to the Grampians and Bolangum Ranges in western Victoria where it occurs on moist east-facing slopes in closed *Eucalyptus* woodland (Fig. 3).

REPRESENTATIVE SPECIMENS:

Victoria — Grampians, near crest of Mt. Difficult Range, E. of Wartook Reservoir, 10.x.1962, *T. B. Muir* 2607 (MEL 99432). Grampians, Mt. Difficult Range (East), 2.vi.1969, *A. C. Beaglehole* 30754 (MEL 99431). Grampians, Mt. Difficult Range road, 12 km N. of its junction with Halls Gap — Zumstein's road, 5.x.1980, *M. G. Corrick* 6801 & *P. S. Short* (MEL 576033).

NOTES:

Mueller based his description of *P. alternifolium* on the following specimens: "On Mount Disappointment, F.v.M.; on Mount Ben Nevis, Ch. Green; on Mount William, Sullivan and Miller." Four syntypes are housed in the National Herbarium of Victoria (MEL), namely, Mt. Disappointment, Mueller (MEL 569726), Mt. Ben Nevis, Ch. Green (MEL 569727) and Mt. William, Sullivan (MEL 569728, MEL 569729). I have not succeeded in locating the syntype from Mt. William collected by Miller although the possibility exists that the flowering specimen received at Kew Herbarium in Oct. 1884 from MEL bearing the locality "Grampians", but without any indication of the collector, is the Miller syntype.

The two syntypes collected by Sullivan have a different facies from that of the specimens collected by Mueller and by Green which suggests that Mueller inadvertently



Fig. 2. *Platylobium alternifolium*. a — flowering twig, x 1; b — flower, with a series of distichous scales and bracts along the length of the pedicel, x 2; c — calyx opened out (upper lobes on left), x 4; d — standard, x 3; e — wing petal, x 3; f — keel petal, x 3; g — staminal tube opened out, x 3; h — gynoecium, x 3; i — pod, side view, x 1½; j — pod, after dehiscence, x 1½; k — seed, side view, x 6; l — seed, hilar view, x 6. a-h from M. G. Corrick 6801 & P. S. Short (MEL 576033); i-l from A. C. Beaglehole 30754 (MEL 99431).

included discordant elements in the protologue of *P. alternifolium*. The Mueller and Green syntypes are rather poor sterile specimens and were no doubt included by Mueller as they have alternate leaves, an occurrence not then recorded in any other *Platylobium* species and to which much significance was attached. One of the Sullivan specimens (MEL 569728) is sterile but the other (MEL 569729) is fertile and shows the series of scales and bracts along the length of the pedicel, the calyx which is glabrous except for a conspicuous fringe of marginal hairs, and a young fruit with long white marginal hairs but otherwise glabrous. The specimen from the Grampians in K referred to above matches the two Sullivan collections.

P. formosum typically has opposite leaves but a variant of this polymorphic species in which the leaves are sometimes alternate occurs sporadically in Victoria from Blackwood in the west to Gippsland in the east. When fertile, such specimens may be distinguished from *P. alternifolium* without difficulty as the calyces and young pods are densely pubescent throughout and the pedicels are exerted from the basal bracts and scales. Sterile specimens are more difficult to place with certainty but I am reasonably satisfied that the specimens collected by Mueller and Green are in fact referable to *P. formosum* and not to *P. alternifolium*. In view of this, I now select Sullivan (MEL 569729) from Mt. William as the lectotype of *P. alternifolium*.

As a result of the exclusion of the variant of *P. formosum* with petiolate alternate leaves from the circumscription of *P. alternifolium*, *P. alternifolium* now has a much more restricted distribution in Victoria being confined apparently to the Grampians and Bolangum Ranges. The only specimen (Audus s.n., MEL 569725) from the Bolangum Ranges is sterile and, because of the uncertainty attached to sterile specimens in this genus, fertile material from this locality is required to confirm the occurrence there of *P. alternifolium*. Audas (1921) made special mention of the unexpected occurrence of *P. alternifolium* in the Bolangum Ranges and there is no reason to suppose that his specimen was not collected there. Audas gave no indication of the route he took after leaving the Kingston mine so it is not possible to re-trace his steps. Unfortunately a recent attempt by my colleague Mrs M. G. Corrick to locate *P. alternifolium* in the Bolangum Ranges was unsuccessful.

P. alternifolium is the only species in the genus in which the calyces are not clothed with appressed or spreading hairs throughout. The consistently alternate leaves distinguish *P. alternifolium* from the other species except for the occasional variant of *P. formosum*.

2. *Platylobium triangulare* R.Br. in Ait.f., Hort. Kew. ed. 2, 4:266 (1812); DC., Prodr. 2:116 (1825) pro parte excl. ref. Sims in Curtis's Bot. Mag. t.1508; Benth., Fl. Austr. 2:152 (1864); J. M. Black, Fl. S. Austr. ed. 2:445 (1948); W. Curtis, Stud. Fl. Tasm. 1:141 (1956); J. H. Willis, Handb. Pl. Vict. 2:278 (1973); non Sims in Curtis's Bot. Mag. t.1508 (1812); non Hook.f., Fl. Tasm. 1:96 (1856). SYNTYPE: See under notes. LECTOTYPE, here selected: Tasmania, King's Island, 23.iv.1802, *R. Brown* (BM; MEL, photo.).

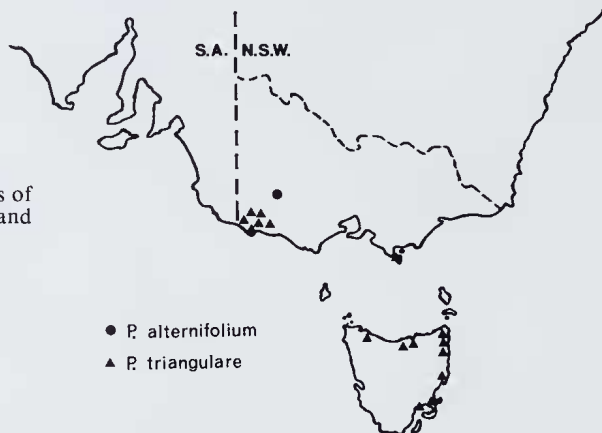
P. murrayanum Hook. in Curtis's Bot. Mat. t.3259 (1833); Hook.f., Fl. Tasm. 1:96 (1856). TYPE: Curtis's Bot. Mag. t.3259 (iconotype).

Small *shrub* with prostrate or ascending, slender, glabrous to densely villous stems up to 50 cm long. *Stipules* ovate, up to 2×1 mm. *Leaves* opposite, simple, broadly triangular or cordate-hastate, the lateral angles and apex usually pungent or the lateral angles of some lower leaves sometimes rounded, (1)1.3-3.2×(0.6)1-2.6 cm, glabrous above and minutely scabrid or with few scattered hairs especially on the midrib, lower surface usually with scattered hairs especially on midrib, larger veins and margins but sometimes glabrescent. *Flowers* usually solitary but 1-3 per axil, on villous pedicels 0.6-1.8 cm long, the pedicels exerted from the basal bracts and scales which are glabrous except for marginal cilia, the paired bracteoles below the calyx 2-3.7×1.5-2 mm, glabrous except for the margins, usually reflexed. *Calyx* densely clothed with long appressed or slightly spreading hairs: 2 upper lobes 9.5-12.5 mm long (including the basal tube of 4.5-6 mm), 5-6.5 mm wide, the 3 lower lobes 4.5-6.5×1.2-1.5 mm, the centre lobe longest and narrowest. *Corolla*: *standard* oblate, 12-16 mm long including a claw up to 3 mm long, 15-18.5 mm wide, deeply emarginate apically, dark purplish-brown or

pinkish-red outside, orange-yellow inside with a yellow basal horse-shoe shaped throat surrounded by a reddish-purple zone; *wings* 10-13 mm long including a claw up to 3 mm long, 4.5-5.5 mm wide, dark reddish basally, orange-yellow apically, auricled; *keel* petals 9.7-12.5 mm long including a claw up to 3 mm long, 4.5-5 mm wide, dark purplish or reddish apically, white basally. *Stamens* up to 11 mm long. *Ovary* 5.5-9 mm long including a stipe 0.5-1.75 mm long, margins with long white hairs but otherwise glabrous; style with long basal hairs, glabrous above. *Pods* oblong, 2.2-3.3 × 1.2-1.8 cm, on a stipe 2-4.5 mm long, with a thin conspicuous wing up to 4 mm wide beyond the upper sutural nerve, 3-5-seeded, with scattered hairs on the margins but otherwise glabrous. *Seeds* ellipsoid, 2.5-3.6 × 1.6-2.3 mm (Fig. 4).

P. triangulare occurs in southern Victoria and in Tasmania where it is found most frequently in open woodland and heathland. There is a curious distributional discontinuity in Victoria from Wilson's Promontory in the east to Orford in the west from where the species extends its range westward as far as the Glenelg River. The area between Wilson's Promontory and Orford is reasonably well collected and the discontinuity appears to be genuine rather than the result of inadequate collecting. According to the label accompanying MEL 572090, the specimen was collected by L. Henry from the Upper Darling near the Queensland border in 1884. However, as this locality is so far removed from the nearest known populations of *P. triangulare*, it seems probable that the label does not belong with the specimen (Fig. 3).

Fig. 3. The known distributions of *Platylobium alternifolium* and *P. triangulare*.



REPRESENTATIVE SPECIMENS:

Victoria — Portland Distr., 4.8 km S.E. of Gorae West along main Portland-Nelson Rd., 22.x.1960, *H. I. Aston* 726 (MEL 570858). 5 km E. of Casterton-Dartmoor main road along Moonlight Rd., 2.xi.1980, *P. S. Short* 1222 (MEL 1522094). Wilson's Promontory, Waterloo Bay, 6.xi.1980, *M. G. Corrick* 7078 (MEL 576042).

Tasmania — St. Helen's, x.1945, *W. M. Curtis* (HO 115500). 3.2 km N.W. of Coles Bay, 14.x.1967, *J. H. Hemsley* 6297 (HO 11557, MEL 570862). Track above Botanical Creek, Freycinet Peninsula, 21.1.1980, *A. M. Buchanan* 152 (HO 36184).

NOTES:

It is not clear whether R. Brown based his description of *P. triangulare* on a plant raised at Kew Gardens from seed introduced by himself in 1805 from Tasmania, whether the description was based on his specimens collected in Australia, or whether it was based on both. I have not succeeded in locating a specimen in BM from a plant cultivated at Kew. In BM there are, however, three R. Brown collections from Australia, namely, an unnumbered specimen collected on King's Island, Bass Strait, on 23 Apr. 1802, an unnumbered specimen collected at Arthur's Seat, Port Phillip, Victoria, in Jan. 1804, and no. 5073. Unfortunately doubt surrounds the provenance of the latter specimen: it is not clear whether it was collected on King's Island on 23 Apr. 1802, at Port Dalrymple in Jan. 1804 or at Arthur's Seat in Jan. 1804. I now select the specimen in BM collected by R. Brown on King's Island, Tasmania, on 23 Apr. 1804 as the lectotype of *P. triangulare*.

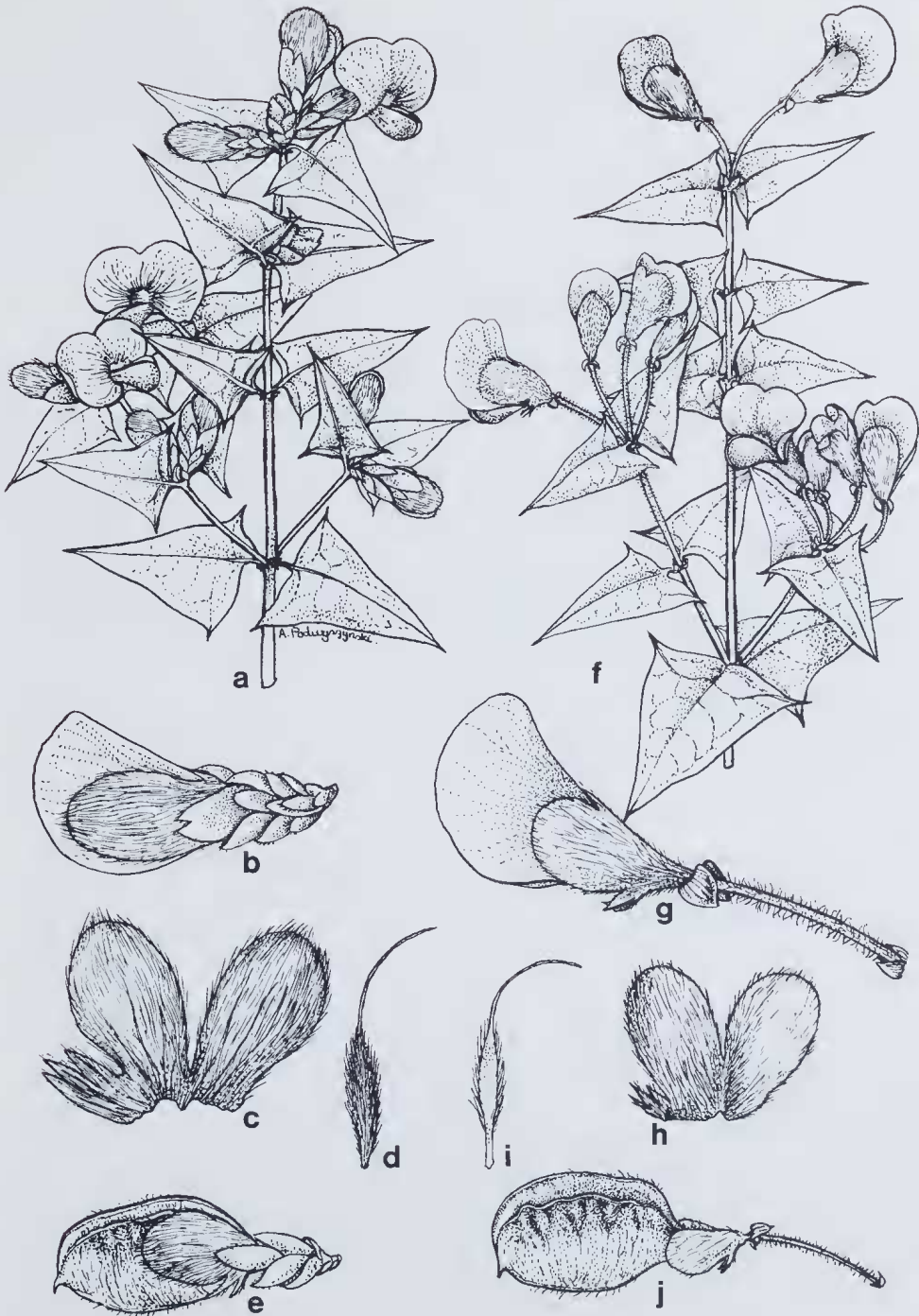


Fig. 4. *Platylobium obtusangulum*. a — flowering twig, x 1; b — flower, showing the short pedicel concealed by imbricate bracts and scales, x 2; c — calyx opened out (upper lobes on right), x 2; d — gynoecium, x 3; e — pod, x 1. *P. triangulare*. f — flowering twig, x 1; g — flower, showing the long pedicel exserted from the basal bracts and scales, x 2; h — calyx opened out, x 2; i — gynoecium, x 3; j — pod, x 1. a-d from J. H. Ross 2475 (MEL 531009); e from A. C. Beaglehole 30037 (MEL 100004); f-i from H. I. Aston (MEL 570858); j from L. Renfrey (MEL 570664).

	<i>P. obtusangulum</i>	<i>P. triangulare</i>
Pedicels	less than 0.5 cm long, completely concealed by the imbricate bracts and scales	0.6-1.8 cm long, exerted from the basal bracts and scales
Bracteoles	7.5-9 × 4-5.5 mm, remaining erect	2-3.7 × 1.5-2 mm, usually reflexed
3 lower calyx lobes	8-9.5 mm long	4.5-6.5 mm long
Ovary	densely villous throughout	glabrous apart from long white hairs on the margins
Pods	sessile and densely pubescent throughout, at least when young	on a stipe 2-4.5 mm and glabrous apart from scattered hairs on the margins

Table 1. Comparison of the diagnostic differences between *P. obtusangulum* and *P. triangulare*.

As R. Brown's description of *P. triangulare* was brief, it is not surprising that the species was confused with the taxon later described by W. J. Hooker as *P. obtusangulum*. The two species are superficially similar and the leaves of *P. obtusangulum* are often as triangular as are those of *P. triangulare*. Diagnostic differences are given in table 1 and these should enable most fertile material of the two species to be distinguished without difficulty. However, on Wilson's Promontory and sporadically elsewhere in Victoria, specimens which have some characteristics of *P. triangulare* and some of *P. obtusangulum* are occasionally encountered. As the relationship of these anomalous specimens appears to be with *P. obtusangulum* rather than with *P. triangulare*, they are discussed under the former species.

3. *Platylobium obtusangulum* Hook. in Curtis's Bot. Mag. 60:t.3258 (1833); Benth., Fl. Austr. 2:153 (1864); J. M. Black, Fl. S. Austr. ed. 2:444 (1948); W. Curtis, Stud. Fl. Tasm. 1:141 (1956); J. H. Willis, Handb. Pl. Vict. 2:277 (1973). TYPE: Curtis's Bot. Mag. t.3258 (iconotype).

P. triangulare sensu Sims, Bot. Mag. t.1508 (1812); sensu Hook.f., Fl. Tasm. 1:96 (1856), non R.Br.

P. macrocalyx Meissn. in Lehm., Pl. Preiss. 1:80 (1844). LECTOTYPE, here selected: Victoria, Port Phillip, 1842, *C. LaTrobe* (NEU 266741!). ISOLECTOTYPE: NY!

P. obtusangulum var. *spinulosum* J. H. Willis, Muelleria 1:126 (1967); Handb. Fl. Vict. 2:277 (1973). HOLOTYPE: Victoria, Otway Range, on Airey's Inlet to Wensleydale road, ± 3.2 km N. of Forestry Tower at Peter's Hill, 12.xi.1961, *M. Allender* (MEL 1522466!).

Shrub with slender, weak, glabrous to densely villous, trailing, decumbent or erect stems up to 1 m long. *Stipules* ovate, up to 4 × 1.5 mm. *Leaves* opposite, unifoliolate or simple, broadly triangular, hastate or trilobate to ovate-cordate, pungent apically, the lateral angles pungent or rounded and obtuse, 1-3 × 0.6-3(3.8) cm, glabrous or minutely scabrid above except when young, lower surface glabrous to densely appressed-pubescent. *Flowers* 1-3 per axil, sessile, the pedicels very short and completely concealed by the imbricate bracts and scales which are glabrous except for the margins or sparingly to densely pubescent throughout, the paired bracteoles below the calyx 7.5-9 × 4-5.5 mm, overlapping the base of the calyx, glabrous except for the margins. *Calyx* densely clothed with long appressed hairs: 2 upper lobes 12-15 mm long (including the basal tube of 3.5-4 mm), 7-8 mm wide, the 3 lower lobes 8-9.5 mm long, all ± the same length, 3-3.5 mm wide. *Corolla: standard* oblate to almost reniform, 12-14 mm long including a claw 3-4 mm long, 16-20 mm wide, emarginate apically, pinkish-red or brownish outside, orange-yellow within with a basal yellow horse-shoe shaped throat surrounded by a reddish zone; *wings* 11-13 mm long including a claw 2-3 mm long, 3-4 mm wide, orange-yellow apically, pinkish-red basally, auricled; *keel* petals 10.5-11 mm long including a claw 2.5-3.5 mm long, reddish apically, white basally, auricled. *Stamens* up to 11 mm long. *Ovary* 5-6 mm long, sessile, densely villous

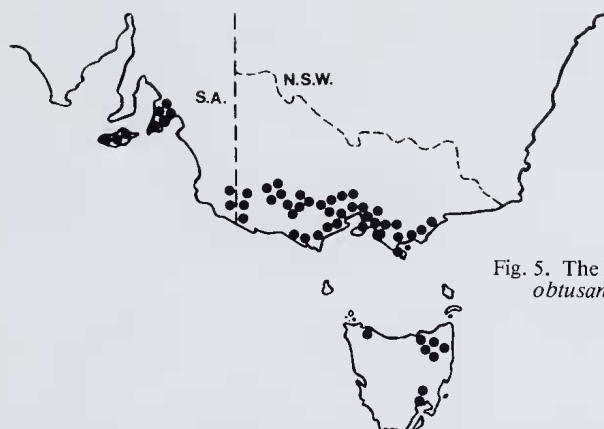


Fig. 5. The known distribution of *Platylobium obtusangulum*.

throughout; style pubescent basally, glabrous above. *Pods* oblong, 1.4-2.5 × 1-1.45 cm, subsessile, with a thin conspicuous wing up to 5 mm wide beyond the upper sutural nerve, 1-5-seeded, pubescent throughout. *Seeds* ellipsoid, 3 × 2.1 mm (Fig. 4).

P. obtusangulum occurs in south-eastern South Australia, southern Victoria and Tasmania where it is found most frequently in open woodland and heathland (Fig. 5).

REPRESENTATIVE SPECIMENS:

South Australia — Kangaroo Island, near Strepera Falls, Middle River, 50 km W. of Kingscote, 14.x.1963, *G. Jackson 330* (AD 96349102). E. of Penola, 50 km N. of Mt. Gambier, 23.xi.1963, *D. Hunt 1691* (AD 96405081). Fleurieu Peninsula, Normanville sand dunes, 65 km SSW. of Adelaide, 11.ix.1969, *D. J. E. Whibley 2913* (AD 97025079).

Victoria — Grampians, Mirranatwa Gap, on Dunkeld Rd. 32 km S. of Hall's Gap, 27.ix.1959, *T. B. Muir 874* (MEL 1522465). Narre Warren East, Wellington Rd., 1 km before turn-off to Cardinia Creek Reservoir, 19.xi.1977, *J. H. Ross 2475* (MEL 531009). Wilson's Promontory, Tongue Point, on track from Derby Saddle near its junction with track from Derby Beach, 2.xi.1980, *M. G. Corrick 7071* (MEL 576039).

Tasmania — George Town, 23.xi.1842, *R. C. Gunn* (HO 11545). Near Mt. Direction, 23.xi.1842, *R. C. Gunn* (HO 11546). Near Launceston, x.1943, *W. M. Curtis* (HO 11543).

NOTES:

Leaf shape in *P. obtusangulum* is extremely variable and quite unreliable as a means of differentiating the superficially similar *P. triangulare*. The differences between the two species are given in table 1.

Willis, *Muelleria* 1:126 (1967), recognised var. *spinulosum* to accommodate a variant from the Otway Ranges, Victoria, with almost rotund leaves which bear 3-7 slender spine-like teeth on the margins. This variant has a very restricted distribution although a similar, but not identical, variant occurs near the Glenelg River. In view of the considerable range of morphological variation encountered within the species, I do not consider this local variant worthy of formal recognition.

On Wilson's Promontory and sporadically elsewhere in Victoria there occur occasional specimens with the pedicels exserted from the basal bracts and scales as in *P. triangulare*, but with large erect bracteoles, large lower calyx lobes and pubescent ovaries as in *P. obtusangulum*. The anomalous specimens, of which Corrick 7069 (MEL 576037) and 7072 (MEL 576036) from Wilson's Promontory are examples, have the general facies of *P. obtusangulum* and differ from it most obviously in the exserted pedicels. Corrick 7069 and 7072 were growing in a population of *P. obtusangulum* and the relationship of these specimens appears to be with *P. obtusangulum* rather than with *P. triangulare*.

4. *Platylobium formosum* Sm., Spec. Bot. New Holl. 1:17, t.6 (1793); Trans. Linn. Soc. Lond. 2:350 (1794); Curtis, Bot. Mag. 14:t.469 (1800); Willd., Sp. Pl. 3:921 (1802); Sm., Trans. Linn. Soc. Lond. 9:302 (1808); DC., Prodr. 2:116 (1825); Paxton, Bot. Mag. 13:195 (1846); Hook.f., Fl. Tasm. 1:96 (1856); Benth., Fl. Austr. 2:153 (1864); F. M. Bailey, Queensland Fl. 2:362 (1900); Curtis, Stud. Fl. Tasm. 1:141 (1956); Burbidge &

Gray, Fl. Austr. Cap. Territ. 213 (1970); J. H. Willis, Handb. Pl. Vic. 2:278 (1973); Beadle et al, Fl. Sydney Region 300 (1973). *P. formosum* var. *typicum* Domin, Biblioth. Bot. 89:728 (1925); *P. formosum* subsp. *formosum* — A. Lee, Contrib. N.S.W. Nat. Herb. 4:97 (1970). LECTOTYPE: here selected: New South Wales, 1793, *J. White* (LINN, sheet 1188.1); see under notes.

P. parviflorum Sm., Spec. Bot. New Holl. 1:18 (1793); Willd., Sp. Pl. 3:921 (1802); Sm., Trans. Linn. Soc. Lond. 9:302 (1808); R.Br. in Sims, Bot. Mag. 37:t.1520 (1813); DC., Prodr. 2:116 (1825); Loddiges, Bot. Cab. 13:t.1241 (1827). *P. formosum* var. *parviflorum* (Sm.) Benth., Fl. Austr. 2:154 (1864); Domin, Biblioth. Bot. 89:728 (1925). *P. formosum* subsp. *parviflorum* (Sm.) A. Lee, Contrib. N.S.W. Nat. Herb. 4:96 (1970). LECTOTYPE, here selected: New South Wales, 1793, *J. White* (LINN, sheet 1188.3, no. 1); see under notes.

P. ovatum sensu DC., Prodr. 2:116 (1825) non *P. ovatum* Andr. (1802).

P. formosum var. *cordifolium* Wawra, Itinera Principum S. Coburgi 1:11 (1883). HOLOTYPE: Victoria, Dandenong, *Wawra* coll. 1, no. 587 (W!).

Shrub or subshrub up to 2.5 m high with prostrate, trailing, scrambling or erect stems, the stems glabrous or sparingly to densely clothed with appressed or spreading villous hairs or minutely scabrid from the persistent bases of the hairs. *Stipules* ovate or narrow-ovate, 3-5 × 0.8-2 mm, reddish to dark brown, usually becoming reflexed. *Leaves* invariably opposite but occasionally some or all leaves borne alternately, sessile or on distinct villous petioles up to 2.4 cm long, extremely variable in size and shape, mostly broadly ovate or ovate-cordate to narrowly ovate-lanceolate, apex pungent or mucronate but without lateral angles, (1)2.5-5(7.2) × (0.7)1-2.5(4) cm, coriaceous, conspicuously reticulately veined, upper surface sparingly to densely pubescent when young but glabrous or minutely scabrid when mature, the lower glabrous or densely clothed with long villous hairs, margins flat or revolute. *Flowers* 1-4 per axil, on sparingly to densely villous pedicels 0.6-3.4 cm long, the pedicels exerted from the basal bracts and scales which are usually glabrous except for the margins but are occasionally pubescent throughout, the paired bracteoles below the calyx usually narrow-ovate, 3.5-5.5(8.5) × 1.5-3 mm, glabrous except for the margins or the outer surface partly or entirely clothed with long villous hairs. *Calyx* densely clothed with appressed or slightly spreading hairs: 2 upper lobes 6-12 mm long (including the basal tube of 2.5-6 mm), 3-5.5 mm wide, the 3 lower lobes 3.5-6 × 0.7-1.2 mm, the centre lobe often longest. *Corolla: standard* oblate, 9.6-16 mm long including a claw 2-4 mm long, 12-21 mm wide, emarginate apically, yellow within with a basal yellow horse-shoe shaped throat surrounded by a reddish zone; *wings* 8-13 mm long including a claw up to 2.75 mm long, 3.5-5 mm wide, yellow throughout or red basally and yellow apically; *keel* petals 8-12 mm long including a claw up to 2.5 mm long, 3.5-6 mm wide, red apically. *Stamens* 7.5-10 mm long. *Ovary* 5.5-8.5 mm long including a stipe up to 1.75 mm long, densely pubescent throughout or pubescence confined to the sutures or to the sutures and portion of the valves or occasionally entirely glabrous. *Pods* oblong, 1.8-4.3(5.5) × 0.9-2 cm, on a stipe 0.5-1.6 cm long, with a thin conspicuous wing up to 4 mm wide beyond the upper sutural nerve, mostly 4-8-seeded, pubescent throughout or pubescence confined to the sutures or to the sutures and portion of the valves or entirely glabrous. *Seeds* ellipsoid, 2.6-4 × 1.8-2.4 mm (Fig. 6).

P. formosum is the most widespread species in the genus occurring from the vicinity of Wide Bay in Queensland southwards along the coast and in the Blue Mountains, Southern Tablelands and South Western Slopes of New South Wales, the A.C.T., Victoria as far west as the Grampians and Tasmania. A common understorey shrub, especially on moister sites (Fig. 7).

NOTES:

J. E. Smith's original description of *P. formosum* (1793) drew attention to the diagnostic distinguishing characters of the species, namely, leaflet shape and the degree of pubescence of the ovary. Although described as "cordato-ovate", the leaves illustrated in the plate accompanying Smith's description are hardly cordate basally but this character may be seen in specimens 1188.1 and 1188.2 in Smith's herbarium (LINN) collected by John White in New South Wales in 1793.

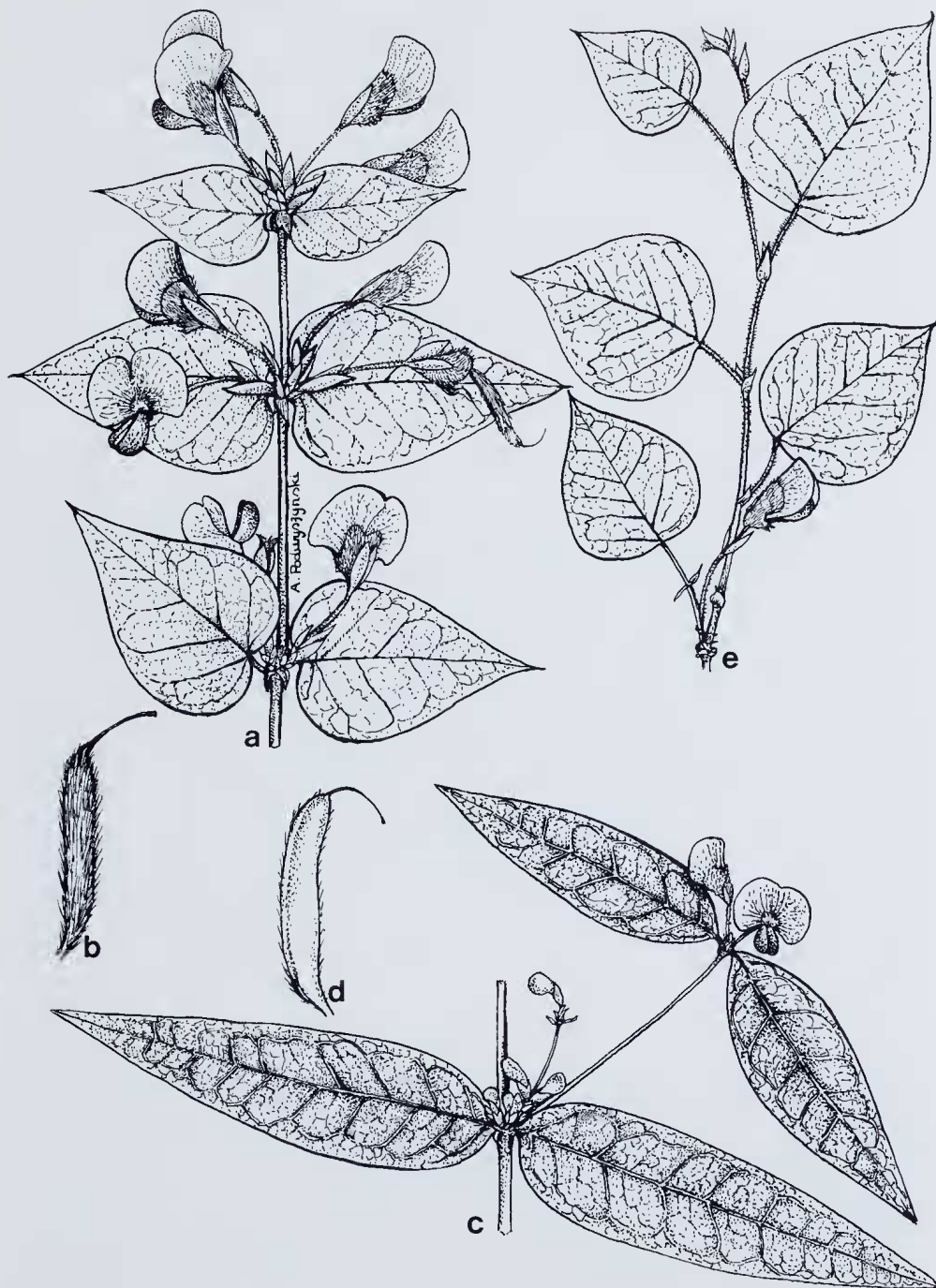


Fig. 6. *Platylobium formosum*. a — flowering twig of typical “*formosum*”, x 1; b — ovary showing pubescence on surface of valves and on the sutures, x 2; c — flowering twig of typical “*parviflorum*”, x 1; d — ovary showing the pubescence confined to the sutures, x 2; e — flowering twig of the Victorian variant with alternate leaves, x 1. a & b from T. B. Muir 3653 (MEL.602925); c & d from N. Ford (NSW 4418); e from H. B. Williamson (MEL 584537).

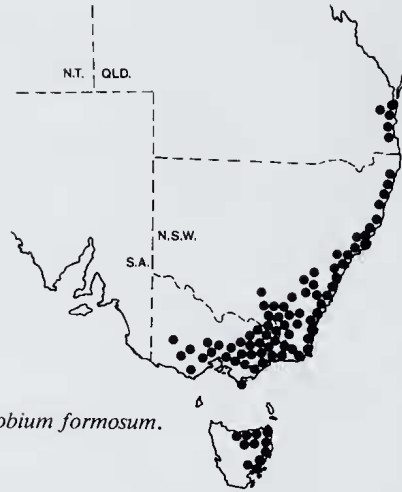


Fig. 7. The known distribution of *Platylobium formosum*.

J. E. Smith (l.c.) distinguished his *P. parviflorum* from *P. formosum* by its "lanceolato-ovate" leaves and glabrous ovaries but the two are conspecific and for a long time have been regarded as such. *P. parviflorum* was accorded varietal rank by Bentham (1864) who lamented that although the variety was usually distinguished by "the narrow leaves, shorter pedicels, smaller flowers, more glabrous bracts, and by the ovary villous near the sutures only and not all over", he found none of the characters constant. Subsequently var. *parviflorum* was raised to subspecific rank (Lee, 1970).

P. formosum is a polymorphic species and is particularly variable in leaf shape and size, petiole and pedicel length, and the degree of pubescence, especially of the ovary and pod. In their typical forms, "*formosum*" and "*parviflorum*" are distinctive largely on account of the obvious differences in leaf shape: the former with cordate-ovate leaves less than twice as long as broad and ovaries and pods pubescent on the surfaces of the valves and on the sutures, and the latter with ovate-lanceolate leaves usually more than twice as long as broad and ovaries and pods with pubescence on the sutures only or entirely glabrous. However, the typical forms are linked by numerous and varied intermediates, especially along the coastal belt from Queensland to Tasmania. It is unfortunate that the material available to Smith when he described *P. formosum* came from coastal New South Wales or was raised in England from seed collected in coastal New South Wales as this is an area in which intermediates abound. The leaves illustrated in the plate accompanying the description of *P. formosum* show a definite approach to some of the intermediates.

In response to a request, M. D. Crisp examined the type material of *P. formosum* and *P. parviflorum* housed in LINN and reported that the ovaries in the type of *P. parviflorum* (sheet 1188.3 specimens no. 1) are glabrous except for a few hairs along the sutures, and the ovaries in the type material of *P. formosum* (sheets 1188.1 and 1188.2) are sparsely villous on the surfaces of the valves over the seeds and on the sutures. The two immature pods in specimen 1188.1 are sparsely villous on the surfaces of the valves over the seeds and have a few basal hairs on the upper suture, a condition also found on the two smaller pods in sheet 1188.2. However, the largest pod on sheet 1188.2 is glabrous apart from some hairs on the sutures, a condition frequently met with in *P. parviflorum*. Of the two sheets, 1188.1 (LINN) is here chosen as the lectotype of *P. formosum*.

As reliance is placed on both leaf shape and on the degree of pubescence of the ovary in differentiating "*formosum*" from "*parviflorum*", and, as these characters to some extent vary independently, the two groups are not homogenous within themselves and a number of specimens cannot be placed satisfactorily in either. Attempts to find additional characters to differentiate "*formosum*" from "*parviflorum*" have been unsuccessful.

The variation within *P. formosum* is to some extent regional. Over much of Victoria (E. Gippsland excepted), the interior of New South Wales and the A.C.T. the leaves are invariably distinctly ovate-cordate, less than twice as long as broad, and the ovaries are consistently densely pubescent throughout. These specimens with densely pubescent ovaries are perhaps as different from the lectotype of *P. formosum* as are the specimens with glabrous ovaries referred to "*parviflorum*". Elsewhere, especially in the coastal belt from Queensland southwards to East Gippsland and in Tasmania, a different range of morphological variation is encountered and it is here that difficulties in naming specimens arise. Although typical "*parviflorum*" occurs in the central coastal area of New South Wales, specimens with the facies of "*parviflorum*" but with the ovaries pubescent throughout or pods with hairs on the surfaces of the valves and on the sutures occur quite commonly along the coast and in Tasmania (for example, E. F. Constable (NSW 30259) from Green Cape Lighthouse Rd., N.S.W.; A. H. S. Lucas (NSW 42888) from near Bicheno, Tasmania; F. H. Long 1203 (HO 11535) from near Orielton, Tasmania).

The degree of pubescence of the ovary (pod) is a less reliable character than previous authors believed. Consequently, in some instances it is difficult to know when naming specimens whether to place most emphasis on leaf shape or on pubescence to avoid the unsatisfactory situation where specimens with a similar facies are referred to different infraspecific categories. An example of this difficulty is provided by a distinctive entity with narrowly ovate-lanceolate sessile leaves which occurs from the vicinity of Twofold Bay in New South Wales southwards to East Gippsland, Victoria. Among the specimens from East Gippsland are Muir 1934 (MEL 602809) from near Cann River, Buckland (MEL 584536) from Club Terrace, Beaglehole 62463 (MEL 1508185) from the vicinity of Gelliondale and Lumley G1/3 (MEL 91913) from Mallacoota. All four specimens have a similar facies but the pods of Muir and Buckland have pubescence on the sutures and on the surfaces of the valves whereas the pubescence on the pods of Beaglehole and Lumley is confined to the sutures. On the basis of pod pubescence, Muir and Buckland are thus referable to "*formosum*" and Beaglehole and Lumley to "*parviflorum*" which is most unsatisfactory. It is only by ignoring the degree of pubescence of the pods in these specimens that a meaningful solution is arrived at. However, if the pubescence of the ovary (pod) is discounted always and reliance is placed solely on leaf shape to distinguish "*formosum*" and "*parviflorum*" the placement of many specimens becomes arbitrary and a different set of intermediate specimens is encountered.

The inclusion within *P. formosum* of a slender prostrate or scrambling variant in which some or all of the leaves are borne alternately increases the range of morphological variation encountered within the species. The variant occurs sporadically in Victoria from Mt. Cole in the west to Newby in East Gippsland and typically the specimens have broadly ovate leaves with petioles 0.6-2.8 cm long, flowers borne on pedicels which usually exceed 2 cm in length, and the young growth is often densely clothed with spreading rusty hairs. Examples include H. B. Williamson (MEL 584538) from Mt. Cole and P. R. H. St John (MEL 569732) from between Bayswater and Vermont. Superficially the specimens bear a fairly close resemblance to *P. alternifolium* and in the past have been confused with and referred to this species. However, this variant is readily distinguished from *P. alternifolium* as the calyces and young pods are densely pubescent throughout and the peduncles are exerted from the basal bracts and scales.

As the variation within *P. formosum* is to some extent regional, the usefulness of formally recognising infraspecific categories appears to vary over the distributional range of the species. The Tasmanian material is relatively uniform as far as leaf shape is concerned but the ovaries vary from glabrous to densely pubescent throughout and many of the specimens are difficult to refer to either "*formosum*" or "*parviflorum*" with certainty. In view of this, the recognition of infraspecific categories in Tasmania does not appear to be warranted or particularly useful. On the other hand, in the central coastal areas of New South Wales recognition of infraspecific categories is undeniably useful.

I have been fortunate in having discussed this species with A. T. Lee, National Herbarium of New South Wales, on several occasions and have had access to the material in NSW which she has annotated. Although acknowledging the existence of differential

tendencies in *P. formosum* I prefer not to recognise formal infraspecific taxa. In reaching this decision I have been influenced more by the difficulties encountered in naming many specimens than in the benefits derived from according the extremes formal taxonomic status. The variation within *P. formosum* is imperfectly understood but I believe that it is more complex than is implied by the recognition of two infraspecific taxa.

REPRESENTATIVE SPECIMENS of "typical *formosum*":

Queensland — Glass House Mountains, Mt. Tunbubudla, 10.viii.1930, *C. E. Hubbard* 3621 (BRI 270963). *New South Wales* — between Binda and Bigga, N.W. of Crookwell, 14.x.1953, *C. W. E. Moore* 2665 (CANB 28812, NSW 42927). A.C.T.: Two Sticks Rd., above Brindabella Valley, 8.xi.1961, *N. T. Burbidge* 7280 (CANB 126420, MEL 602825, NSW 76864). *Victoria* — Sassafras Gap, 40 km N. of Benambra on road to Corryong, 25.xi.1954, *H. I. Aston* 1273 (MEL 602924). *Tasmania* — Port Sorell, x.1943, *W. M. Curtis* (HO 11538).

REPRESENTATIVE SPECIMENS of "typical *parviflorum*":

New South Wales — Pennant Hills, 19.ix.1936, *J. Vickery* (NSW 42947). Epping, 14.ix.1947, *N. Ford* (NSW 4418). Lindfield Fire trail towards Lane Cove National Park, 28.ix.1975, *J. G. Seur* 300 (NSW).

REPRESENTATIVE SPECIMENS of "intermediates":

New South Wales — Green Cape Lighthouse Rd., 9.x.1954, *E. F. Constable* (NSW 30259). Fiona Beach, 8 km S. of Forster, 10.x.1961, *E. F. Constable* 1289 (NSW 100827). *Tasmania* — near Mt. Direction, 19.xi.1842, *R. C. Gunn* 1016/1842 (NSW 42887). Black Charles Opening, near Orielton, 13.xi.1933, *F. H. Long* 1203 (HO 11535).

The following key is provided for those who wish to recognise the two subspecies as defined by Lee (1970):

Leaves usually ovate-cordate, length up to twice the breadth; ovary pubescent on the surfaces of the valves and on the sutures; pods pubescent on the sutures and retaining some pubescence on the valves. subsp. *formosum*
 Leaves usually narrow-ovate, not cordate basally, length more than twice the breadth; ovary glabrous throughout or pubescent on sutures only; pods glabrous or almost so or with pubescence confined to the sutures subsp. *parviflorum*

SPECIES INCERTAE

Platylobium gracile Dum.-Cours., *Le Botanique Cultivateur* ed. 2, 7:314 (June 1814). Dumont de Courset provided the following description: "Cette espèce a un joli feuillage. Ses tiges et ses rameaux sont très-menus. Ses feuilles rondes avec une pointe courte particuliere, sont parsemées en-dessus de poils rares, et portées sur de courts-petioles. Elles n'ont que 2 à 3 lignes di diamètre. Les fleurs sont petites, jaunes, pédonculées, solitaires, axillaires."

The description is inadequate to positively identify the plant and it is uncertain whether it is even a species of *Platylobium*. No specimen appears to have been preserved and consequently *P. gracile* is rejected as a name of uncertain application.

Platylobium rotundifolium Colla, *Hortus Ripulensis* 1:110 (1824). The brief description given by Colla is as follows: "Sub hoc nomine missum ab *H. sedy* nullibi enumeratum inveni: parum differre videtur a *P. formoso* (W: sp. III 921). folia tamen sunt *orbiculata nec cordata*."

The description is inadequate to positively identify the plant and I have not succeeded in tracing a specimen in BR or TO, the herbaria alleged (Stafleu & Cowan, 1976) to house Colla's herbarium, on which the name was based. *P. rotundifolium* is rejected, therefore, as a name of uncertain application.

EXCLUDED SPECIES

Platylobium lanceolatum Andr., *Bot. Repos.* 3:t.205 (1802) = ***Bossiaea heterophylla*** Vent., *Descr. Plant. Nouv.* 1:7, t.7 (1800).

Platylobium microphyllum Sims, in *Curtis's*, *Bot. Mag.* 22:t.863 (1805) = ***Bossiaea obcordata*** (Vent.) Druce, *Rep. Bot. Soc. Exch. Club*, suppl. 2, 1916:610 (1917).

Platylobium obcordatum Vent., *Jardin de la Malmaison* 1:t.31 (1804), non DC. (1825) = ***Bossiaea obcordata*** (Vent.) Druce, *Rep. Bot. Soc. Exch. Club*, suppl. 2, 1916:610 (1917).

- Platylobium ovatum* Andr., Bot. Repos. 4:t.266 (1802), non sensu DC. (1825) = **Bossiaea heterophylla** Vent., Descr. Plant. Nouv. 1:7, t.7 (1800).
Platylobium reticulatum Sieb. ex Spreng., Syst. Veg. ed. 16, 3:231 (1826) = **Mirbelia platyloboides** (DC.) J. Thompson, Proc. Linn. Soc. N.S.W. 83:123 (1959).
Platylobium scolopendrium Andr., Bot. Repos. 3:t.191 (1801) = **Bossiaea scolopendria** (Andr.) Sm., Trans. Linn. Soc. Lond. 9:303 (1808).
Platylobium spinosum Turcz., Bull. Soc. Nat. Mosc. 26:284 (1853) = **Bossiaea spinosa** (Turcz.) Domin, Vestn. Kral. Ceske Spolecn. Nauk., Tr. Mat.-Prir. 1919-22, 2:39 (1923).

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